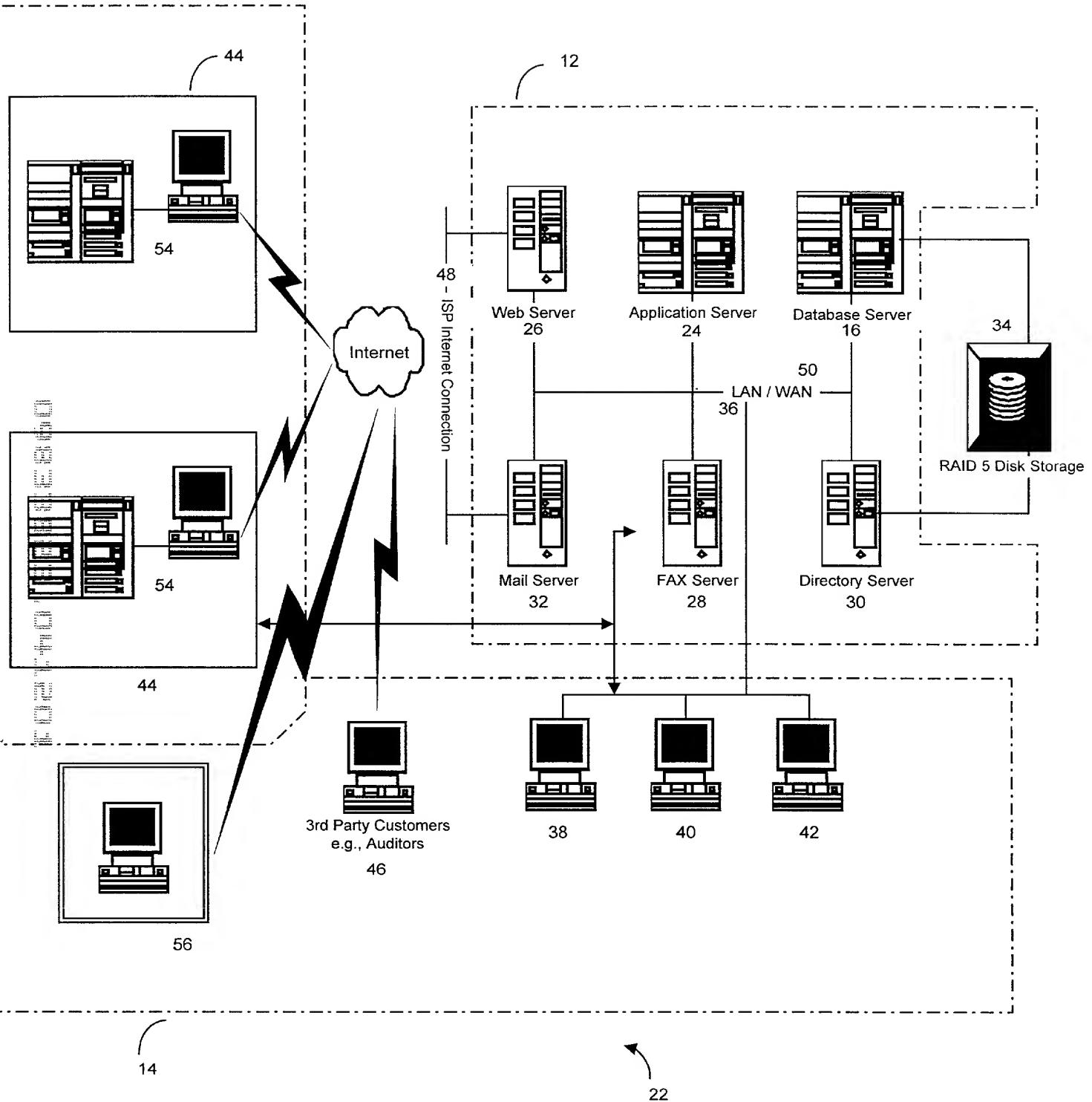
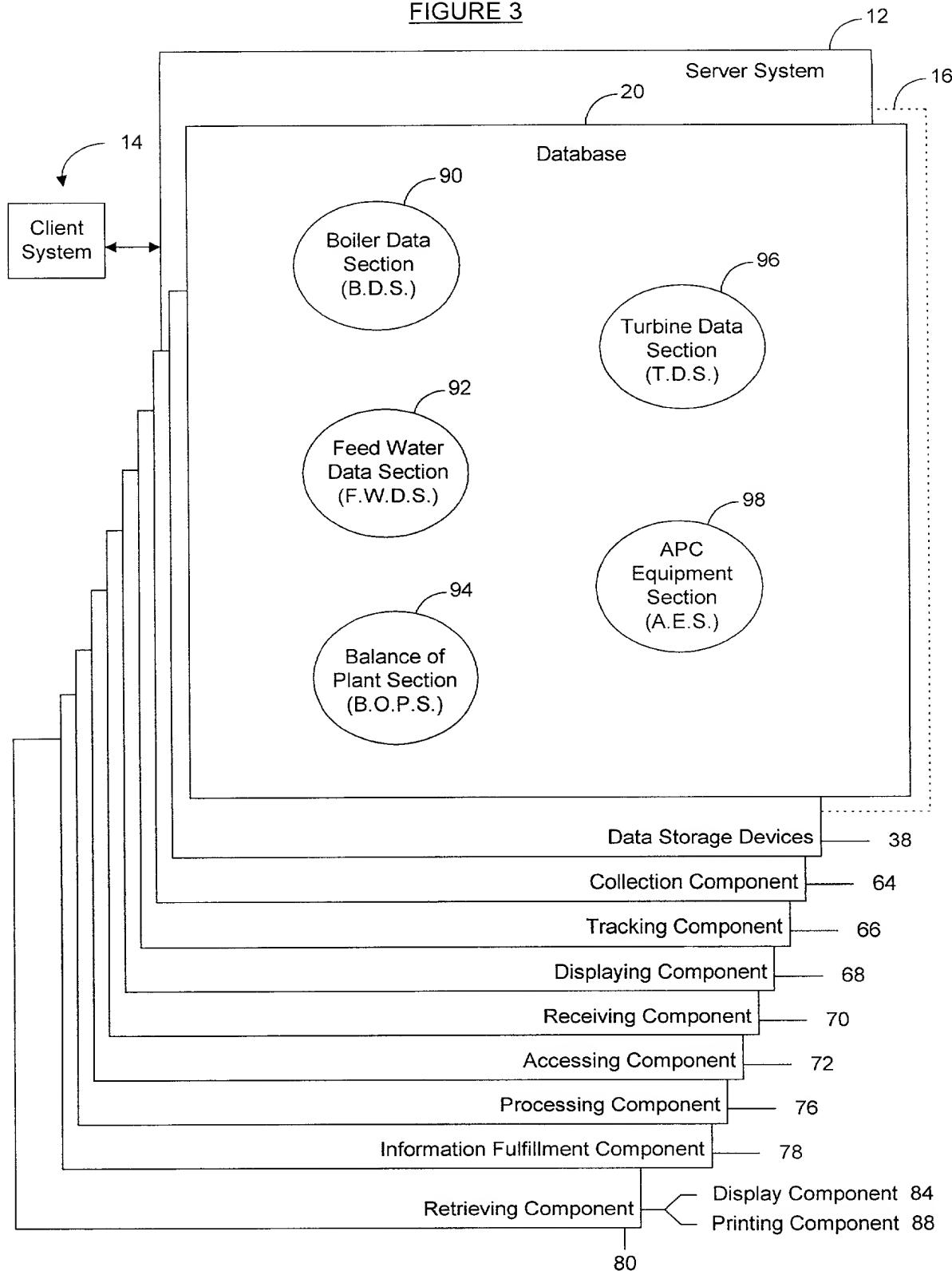


FIG. 1



**FIGURE 2**

FIGURE 3



File Name CoalPm034601  
 Project Name Sampi Project  
 Location USA  
 Operator To Be Determined

#### Facility Generation Information (per unit information):

	Unit Gross Output (MVA)	Unit 1	Unit 2	Unit 3	Unit 4	Unit 5	Unit 6	Unit 7	Unit 8
	House Load	Type of Unit							
Existing Operational Hours From CO	148,920	0	0	0	0	0	0	0	0

#### Dispatch Information:

	Unit 1	Unit 2	Unit 3	Unit 4	Unit 5	Unit 6	Unit 7	Unit 8
Percentage of Available Hours Dispatched								
January	100.00%	83.00%	93.00%	93.00%	93.00%	93.00%	93.00%	93.00%
February	100.00%	83.00%	93.00%	93.00%	93.00%	93.00%	93.00%	93.00%
March	100.00%	84.00%	94.00%	94.00%	94.00%	94.00%	94.00%	94.00%
April	100.00%	84.00%	94.00%	94.00%	94.00%	94.00%	94.00%	94.00%
May	100.00%	85.00%	95.00%	95.00%	95.00%	95.00%	95.00%	95.00%
June	100.00%	85.00%	95.00%	95.00%	95.00%	95.00%	95.00%	95.00%
July	100.00%	88.00%	98.00%	98.00%	98.00%	98.00%	98.00%	98.00%
August	100.00%	98.00%	98.00%	98.00%	98.00%	98.00%	98.00%	98.00%
September	100.00%	95.00%	96.00%	96.00%	96.00%	96.00%	96.00%	96.00%
October	100.00%	95.00%	96.00%	96.00%	96.00%	96.00%	96.00%	96.00%
November	100.00%	94.00%	94.00%	94.00%	94.00%	94.00%	94.00%	94.00%
December	100.00%	94.00%	94.00%	94.00%	94.00%	94.00%	94.00%	94.00%
Dispatched Load								
January	98.00%	98.00%	98.00%	98.00%	98.00%	98.00%	98.00%	98.00%
February	65.00%	88.00%	88.00%	88.00%	88.00%	88.00%	88.00%	88.00%
March	85.00%	97.00%	97.00%	97.00%	97.00%	97.00%	97.00%	97.00%
April	85.00%	88.00%	88.00%	88.00%	88.00%	88.00%	88.00%	88.00%
May	86.00%	88.00%	88.00%	88.00%	88.00%	88.00%	88.00%	88.00%
June	86.00%	88.00%	88.00%	88.00%	88.00%	88.00%	88.00%	88.00%
July	85.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
August	95.00%	99.00%	99.00%	99.00%	99.00%	99.00%	99.00%	99.00%
September	95.00%	99.00%	99.00%	99.00%	99.00%	99.00%	99.00%	99.00%
October	95.00%	98.00%	98.00%	98.00%	98.00%	98.00%	98.00%	98.00%
November	95.00%	98.00%	98.00%	98.00%	98.00%	98.00%	98.00%	98.00%
December	95.00%	98.00%	98.00%	98.00%	98.00%	98.00%	98.00%	98.00%

124

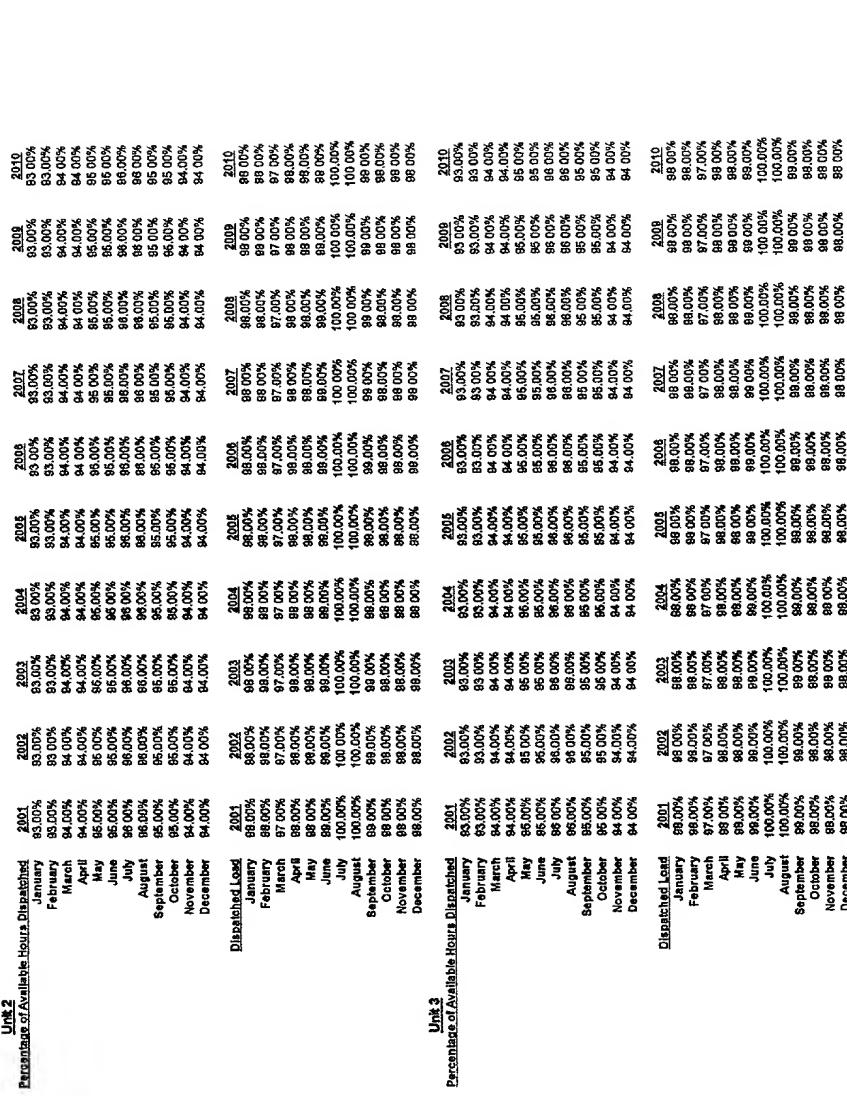
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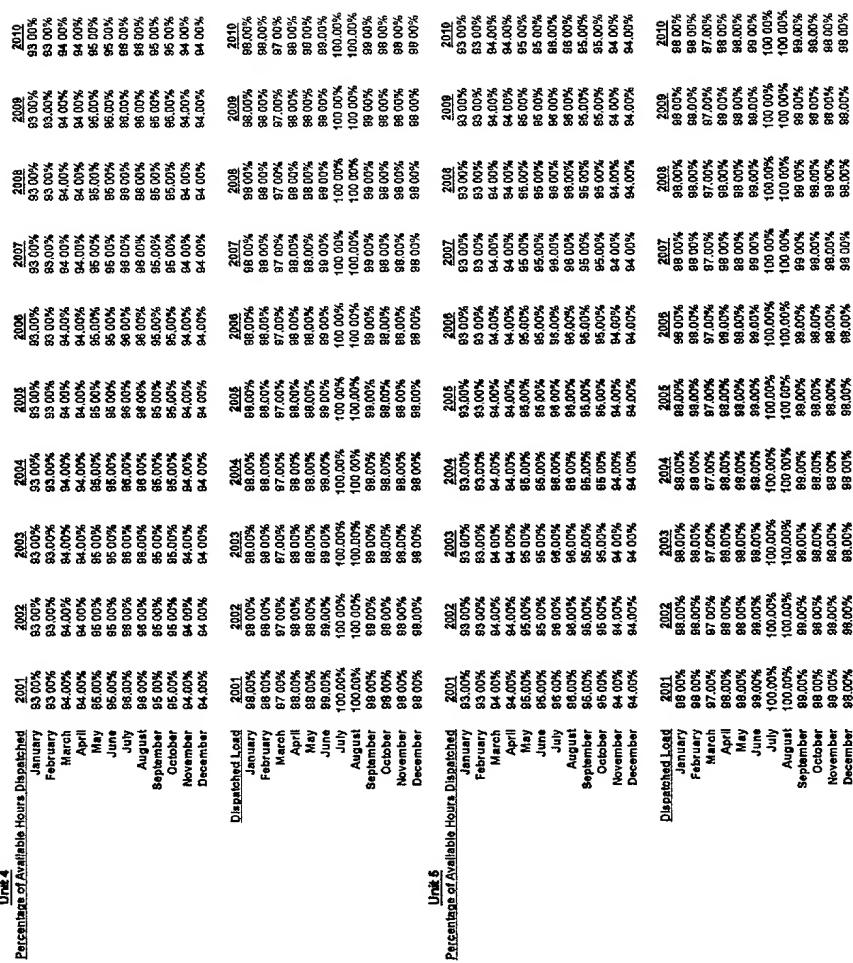
132

128

FIGURE - 4

120





Unit 6		Percentage of Available Hours Dispatched											
Dispatched Load	Month	January	February	March	April	May	June	July	August	September	October	November	December
2001	January	93.00%	93.00%	93.00%	93.00%	93.00%	93.00%	93.00%	93.00%	93.00%	93.00%	93.00%	93.00%
2002	January	93.00%	93.00%	93.00%	93.00%	93.00%	93.00%	93.00%	93.00%	93.00%	93.00%	93.00%	93.00%
2003	January	93.00%	93.00%	93.00%	93.00%	93.00%	93.00%	93.00%	93.00%	93.00%	93.00%	93.00%	93.00%
2004	January	93.00%	93.00%	93.00%	93.00%	93.00%	93.00%	93.00%	93.00%	93.00%	93.00%	93.00%	93.00%
2005	January	93.00%	93.00%	93.00%	93.00%	93.00%	93.00%	93.00%	93.00%	93.00%	93.00%	93.00%	93.00%
2006	January	93.00%	93.00%	93.00%	93.00%	93.00%	93.00%	93.00%	93.00%	93.00%	93.00%	93.00%	93.00%
2007	January	93.00%	93.00%	93.00%	93.00%	93.00%	93.00%	93.00%	93.00%	93.00%	93.00%	93.00%	93.00%
2008	January	93.00%	93.00%	93.00%	93.00%	93.00%	93.00%	93.00%	93.00%	93.00%	93.00%	93.00%	93.00%
2009	January	93.00%	93.00%	93.00%	93.00%	93.00%	93.00%	93.00%	93.00%	93.00%	93.00%	93.00%	93.00%
2010	January	93.00%	93.00%	93.00%	93.00%	93.00%	93.00%	93.00%	93.00%	93.00%	93.00%	93.00%	93.00%
Unit 7		Percentage of Available Hours Dispatched											
Dispatched Load	Month	January	February	March	April	May	June	July	August	September	October	November	December
2001	January	98.00%	98.00%	98.00%	98.00%	98.00%	98.00%	98.00%	98.00%	98.00%	98.00%	98.00%	98.00%
2002	January	98.00%	98.00%	98.00%	98.00%	98.00%	98.00%	98.00%	98.00%	98.00%	98.00%	98.00%	98.00%
2003	January	98.00%	98.00%	98.00%	98.00%	98.00%	98.00%	98.00%	98.00%	98.00%	98.00%	98.00%	98.00%
2004	January	98.00%	98.00%	98.00%	98.00%	98.00%	98.00%	98.00%	98.00%	98.00%	98.00%	98.00%	98.00%
2005	January	98.00%	98.00%	98.00%	98.00%	98.00%	98.00%	98.00%	98.00%	98.00%	98.00%	98.00%	98.00%
2006	January	98.00%	98.00%	98.00%	98.00%	98.00%	98.00%	98.00%	98.00%	98.00%	98.00%	98.00%	98.00%
2007	January	98.00%	98.00%	98.00%	98.00%	98.00%	98.00%	98.00%	98.00%	98.00%	98.00%	98.00%	98.00%
2008	January	98.00%	98.00%	98.00%	98.00%	98.00%	98.00%	98.00%	98.00%	98.00%	98.00%	98.00%	98.00%
2009	January	98.00%	98.00%	98.00%	98.00%	98.00%	98.00%	98.00%	98.00%	98.00%	98.00%	98.00%	98.00%
2010	January	98.00%	98.00%	98.00%	98.00%	98.00%	98.00%	98.00%	98.00%	98.00%	98.00%	98.00%	98.00%

F16 URC - 7

## FIGURE - 8

---

Unit 8 Percentage of Available Hours Dispatched	
January	93.00%
February	93.00%
March	94.00%
April	94.00%
May	95.00%
June	95.00%
July	98.00%
August	98.00%
September	98.00%
October	98.00%
November	94.00%
December	94.00%
January	98.00%
February	98.00%
March	98.00%
April	98.00%
May	98.00%
June	98.00%
July	100.00%
August	100.00%
September	99.00%
October	99.00%
November	99.00%
December	99.00%
January	2001
February	2002
March	2003
April	2004
May	2005
June	2006
July	2007
August	2008
September	2009
October	2010

142

Fuel Information

Actual Values
---------------

Moisture & Ash Free	74.88%
Carbon	0.28%
Nitrogen	1.08%
Oxygen	0.02%
Chlorine	0.02%
Sulfur	1.31%
Others	18.23%

Ash Mineral Analysis	\$1,000/t
Alumina - Al2O3	14.00%
Magnesia - MgO	1.10%
Titanium - TiO2	0.00%
Iron Oxide - Fe2O3	24.40%
Lime - CaO	0.00%
Magnesia - MgO	0.00%
Potassium Oxide - K2O	1.30%
Sodium Oxide - Na2O	59.20%
Sulfur Trioxide - SO3	0.10%
Phosphorus Pentoxide - P2O5	0.10%
Undetermined	2.00%

144

Operational Information:

Actual Cycle Values
---------------------

Cycle

Exhaust Air Flow (m³/h)	Outlet Pressure (psi)	Outlet Temperature (°C)
2,483.331	24/00	1,000
Unit 1		
Unit 2		
Unit 3		
Unit 4		
Unit 5		
Unit 6		
Unit 7		
Unit 8		
Reheated Flow (m³/h) Unit Pressure (psi)	539	574
Unit 1	2,258.015	
Unit 2		
Unit 3		
Unit 4		
Unit 5		
Unit 6		
Unit 7		
Unit 8		

146

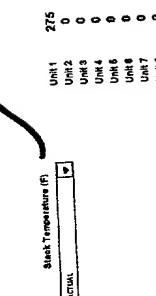
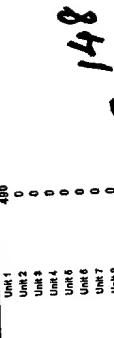


FIGURE-9

140

160

FIGURE E-10

Cost Estimate  
FOB Mine  
Transportation  
\$30,000

Pricing Information

Unit 1	SCA
Unit 2	Low cost
Unit 3	Low cost
Unit 4	High cost
Unit 5	Low cost
Unit 6	Low cost
Unit 7	Low cost
Unit 8	Low cost

Unit 1	Activated carbon
Unit 2	No control
Unit 3	No control
Unit 4	No control
Unit 5	No control
Unit 6	No control
Unit 7	No control
Unit 8	No control

168

NOx Control Equipment

Unit 1	SCA
Unit 2	Low cost
Unit 3	High cost
Unit 4	Low cost
Unit 5	Low cost
Unit 6	Low cost
Unit 7	Low cost
Unit 8	Low cost

170

SO2 Control Equipment

Unit 1	SCA
Unit 2	Low cost
Unit 3	Low cost
Unit 4	Low cost
Unit 5	Low cost
Unit 6	Low cost
Unit 7	Low cost
Unit 8	Low cost

Mercury Control Equipment

Unit 1	SCA
Unit 2	No control
Unit 3	No control
Unit 4	No control
Unit 5	No control
Unit 6	No control
Unit 7	No control
Unit 8	No control

Flyash Control Equipment

Unit 1	SCA
Unit 2	ESP
Unit 3	ESP
Unit 4	ESP
Unit 5	ESP
Unit 6	ESP
Unit 7	ESP
Unit 8	ESP

Biopost

Unit 1	SCA
Unit 2	ESP
Unit 3	ESP
Unit 4	ESP
Unit 5	ESP
Unit 6	ESP
Unit 7	ESP
Unit 8	ESP

Sulfite BAGS

Unit 1	SCA
Unit 2	ESP
Unit 3	ESP
Unit 4	ESP
Unit 5	ESP
Unit 6	ESP
Unit 7	ESP
Unit 8	ESP

162

Facility Equipment Information:

Unit 1	SCA
Unit 2	ESP
Unit 3	ESP
Unit 4	ESP
Unit 5	ESP
Unit 6	ESP
Unit 7	ESP
Unit 8	ESP

164

**STEAM CONDITIONS:**

	<u>Without QF Steam</u>	<u>With Equiv. QF Steam</u>	<u>lb/hr</u>
Superheater Flow	2,568,331	2,568,331	
Reheater Flow	2,254,665	2,254,665	

202

	<u>Superheat</u>	<u>Reheat</u>
Inlet Conditions		
Steam Pressure - psia	2,470	639
Steam Quality	0	
Water/Steam Temp. - F	490	660
Enthalpy	476	1,325
Outlet Conditions		
Steam Pressure - psia	2,415	589
Steam Temp - Deg. F	1,000	1,000
Enthalpy	1,460	1,518
Heat Input	984	192

204

<u>QF HEAT LOSS</u>	<u>No Loss</u>
<u>Pounds Per Hour</u>	0
Pressure - psia	464.696
Temperature	460
Degrees of SH	50
QF Steam Enthalpy	1243.18
FW Enthalpy	476.14
Heat Loss - Btu/s	0 Btu/s
Increase in Steam - #/hr	0 #/hr
	0.00%
Equiv Output - MW	373 MW

<u>No Loss</u>	<u>Included</u>
Pounds Per Year	0.0000E+00

206

208

<u>Reheat-To Superheat Ratio</u>	<u>0.877871661</u>
----------------------------------	--------------------

	<u>100%</u>	<u>(MCR)</u>	<u>95.00%</u>	
FUEL	Pulverized Coal			
TURBINE STEAM FLOW CORRECTION FACTOR				
EVAPORATION	Superheater Reheater: lb/hr	0.9589 2,568,331 2,254,665	/	0.9589 2,439,914 2,141,932
TEMP AT SUPERHEATER/REHEATER OUTLET	F	1,000	1,000	1,000
PRES AT SUPERHEATER/REHEATER OUTLET	psig	2,400	574	574
FEEDWATER TEMP	F	490		490
GAS TEMP LEAVING AIR HEATER	F	275		268
(uncorr.)				
AMBIENT AIR TEMP.	F	80		80
AIR TEMP LEAVING THE AIR HEATER (APPROX)	F	552		552
EXCESS AIR	pct	20		20
HEAT LOSSES				LHV
196	DRY GAS	pct	4.36%	4.20%
	H2O & H2 IN FUEL	pct	8.04%	8.02%
	H2O IN AIR	pct	0.10%	0.10%
	CARBON	pct	0.25%	0.24%
	RADIATION	pct	0.35%	0.33%
	MFG. MARGIN	pct	1.50%	1.43%
	HEAT CREDITS	pct	-0.41%	-0.39%
	BLOWDOWN	pct	0.00%	0.00%
	TOTAL	pct	14.19%	13.92%
EFFICIENCY	2198 200	pct	85.81%	86.08% 93.85%
GROSS HEAT FIRED	MMbtu/hr	3,554.99	3,366.55	31
FUEL FIRED PER HOUR	lb/hr	418,234	396,065	32
AVERAGE LOAD CONDITION DURING AVAILABE HOURS	TPH	209.12	190	198.03 180
AVAILABLE HOURS	%	100.00%		33 95.00%
FUEL FIRED PER YEAR	t/yr	8,256		8,256
		1,726,472		1,634,955
TOTAL COMBUSTION PRODUCTS	lb/hr	3,601,358	3,410,456	38
	ACFM	1,109,079		39
TOTAL COMBUSTION AIR	lb/hr	3,183,124	3,014,392	40
	ACFM	997,176		41
TOTAL ASH (100% UP)	t/hr	11.50	10.89	43
TOTAL LIMESTONE (100% UP)	t/hr	3.10	2.93	44
TOTAL FLYASH/LIMESTONE REMOVAL SYSTEM LOADING	t/yr	25,596	24,230	45
	t/hr	14.60	13.83	46
FLUE GAS TO STACK	lb/hr	3,601,358	3,410,456	48
LJUNGSTROM AIR HEATER LEAKAGE	lb/hr	0	0	49
SOOTBLOWING STEAM	t/hr	0	0	51
NET EVAPORATION	BTU/KW HR	2,568,331	2,439,914	52
POUNDS STM/KW		6.89		53
NO. OF UNITS		1		54
HEAT RATE CALCULATION (APPROX.):				55
Gross Heat Rate (Total Plant):	BTU/KW HR			56
Net Heat Rate (Turbine Only)	BTU/KW HR			57
Plant Gross Heat Rate:	BTU/KW HR			58
Plant Net Heat Rate	BTU/KW HR			59
	BTU/KW HR	kJ/kWh	BTU/KW HR	kJ/kWh
	9,543	HHV	10,068	10,036
	8,624	LHV	9,310	9,280
	10,098	HHV	10,654	10,621
	9,338	LHV	9,852	9,820

FIGURE - 11 ↑ 190

	2001	Unit 1	Unit 2	Unit 3	Unit 4	Unit 5	Unit 6	Unit 7	Unit 8	Total
<b>Direct Labor:</b> Adjusted for local labor requirements year 1 now 0	0									\$0 460,463 F
<b>Operator's Fees &amp; Services</b>	\$6,460,463									\$227,429 F
<b>Bonus Payment:</b>	\$0									\$0 F
<b>Home Office Technical Support:</b> Percent of Actual Labor	\$0									\$0 F
<b>Warranty Support:</b> Percent of Actual Labor	\$0									\$0 F
<b>Planned Maintenance:</b>	\$4,100,334									\$4,100,334 M
 <b>Boiler:</b> Turbo (Major Turbine Outage assumed in 1988) APC Equipment Furnace System BOP										\$4,100,333 M
<b>Unplanned Maintenance:</b> (10% of Planned Maintenance)	\$4,100,333									
<b>Planned Spare Parts:</b>										
Boiler	\$173,1581									\$173,1581 V
Turbo	\$78,230									\$78,230 V
APC Equipment	\$14,441									\$14,441 V
Furnace System	\$12,161									\$12,161 V
BOP	\$173,031									\$173,031 V
<b>Unplanned Spare Parts:</b>										
10% of Planned Spare Parts	\$208,659									\$208,659 V
<b>Employee Travel &amp; Relocation:</b>	\$68,300									\$68,300 F
<b>Other Employee Expenses, Fees and Services</b>	\$285,422									\$285,422 F
<b>Office/Administrative expenses:</b>	\$35,972									\$35,972 F
 <b>Contract Services:</b>										
<b>Percent of Actual Labor:</b>										
Air Disposal:	\$1,120,360									\$1,120,360 V
Start-up Fuel:	\$2,176									\$2,176 V
Consumables:	\$370,977									\$370,977 V
Chemicals:	\$48,086									\$48,086 V
Cost:	\$49,510,060									\$49,510,060 V
Limestone:	\$19,478									\$19,478 V
Purchased Power:	\$1,127,700									\$1,127,700 V
Equipment Rental:	\$1,416,853									\$1,416,853 V
 <b>Total Operating Budget Case 4</b>										
Taxes	\$0									
Insurance	\$0									
<b>Total Operating Costs including Taxes and Insurance</b>	\$0									\$0 350,937 F
<b>Gross kW generated Annually</b>	2,361,706,422	0	0	0	0	0	0	0	0	2,361,706,422
<b>Cost of Generation</b>										\$0 028

FIGURE - 12

220 ↴

230

FIGURE - 13

O&M Cost Summary For: 2001				
	Fleet Costs	Variable Costs	Other Maintenance	Fuel
<b>Direct Labor:</b>				
Operator's Fees & Services:	\$6405.65			
Bonus Payments:	\$27.39			
Home Office Technical Support:	\$5			
Warranty Support:	\$0			
<b>Planned Maintenance:</b>				
Power Marketing & Resource Management	\$0			
Unplanned Maintenance:				
Planned Spare Parts:				
Bikes:	\$1,711.81			
Turbine:	\$750.20			
APC Equipment:	\$140.51			
Fleetwatch System:	\$12.61			
BOF:	\$173.82			
Unplanned Spare Parts:				
Employee Travel & Relocation:	\$65.30			
<b>Other Employee Expenses, Fees and Services</b>				
Office/Administration expenses:	\$295.42			
Contract Services:				
Ash Disposal:	\$1,128.90			
Start-up Fuel:	\$34.75			
Consumables:	\$719.97			
Chemicals:	\$405.86			
Cost:				
Limestone:	\$269.48			
Purchased Power:	\$12,120			
Equipment Rental:	\$1,118.23			
Total Operating Budget	\$1,422,005	\$7,219.15	\$4,610,267	\$4,810,260
		13.25%	8.67%	89.24%
		Fleet Costs	Variable Costs	Fuel
		\$0.0025	\$0.0025	\$0.0025
				\$12,0250
				Total Generation
				\$2,113
				\$4,810,267
				\$4,810,267

## FIGURE 14

240

### Operator: To Be Determined

### Facility Generation Information (per unit information):

Facility Net Output: In-House Load (-5.5%):		Unit 1	Unit 2	Unit 3	Unit 4	Unit 5	Unit 6	Unit 7	Unit 8	Total
Line Losses: Unit Gross Output:		1	352.0	0.0	0.0	0.0	0.0	0.0	0.0	352.0 MW
O&M Costs Calculated: Equity Increased MW Output: ( Approximate )		5.50%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00% MW
Gross Output Used in O&M Calculations: Unit Net Heat Rate (MMBtu/		20.46	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00 MMBtu/MMBtu
Total Installed Capacity in MW		373	0	0	0	0	0	0	0	373 MW
Equivalent Gross Based on Actual Gross Output = 1 Based on Eq'd. Gross Output = 2		0 #hr	0	0	0	0	0	0	0	MW
( Full Load Calculated Value )		BTU/KWH	10,988	0	0	0	0	0	0	BTU/kWh
kW/kWh		10,984	0	0	0	0	0	0	0	kWh/kWh

### Operational Information For:

2001		Unit In Operation	Year=1, Net=1	Unit 1	Unit 2	Unit 3	Unit 4	Unit 5	Unit 6	Unit 7	Unit 8	Total
Base O&M Labor Costs On		1	0	0	0	0	0	0	0	0	0	0
Gross Maximum Capacity		373	0	0	0	0	0	0	0	0	0	373
Net Maximum Capacity		352	0	0	0	0	0	0	0	0	0	352
Gross Generation (Actual)		89.53%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Net Generation (Actual)		86.25%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Period Hours Available		2,621,798	0	0	0	0	0	0	0	0	0	2,621,798
Fixed Outage Hours		2,761,087	0	0	0	0	0	0	0	0	0	2,761,087
Planned Outage Hours		0	0	0	0	0	0	0	0	0	0	0
Maintenance Outage Hours		0	0	0	0	0	0	0	0	0	0	0
Average Load Condition (Gross)		MW	0	0	0	0	0	0	0	0	0	MW
Average Load Condition (Net)		%	95.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	%

242

2001		Unit In Operation	Year=1, Net=1	Unit 1	Unit 2	Unit 3	Unit 4	Unit 5	Unit 6	Unit 7	Unit 8	Total
Base O&M Labor Costs On		1	0	0	0	0	0	0	0	0	0	0
Gross Maximum Capacity		373	0	0	0	0	0	0	0	0	0	373
Net Maximum Capacity		352	0	0	0	0	0	0	0	0	0	352
Gross Generation (Actual)		89.53%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Net Generation (Actual)		86.25%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Period Hours Available		2,621,798	0	0	0	0	0	0	0	0	0	2,621,798
Fixed Outage Hours		2,761,087	0	0	0	0	0	0	0	0	0	2,761,087
Planned Outage Hours		0	0	0	0	0	0	0	0	0	0	0
Maintenance Outage Hours		0	0	0	0	0	0	0	0	0	0	0
Average Load Condition (Gross)		MW	0	0	0	0	0	0	0	0	0	MW
Average Load Condition (Net)		%	95.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	%

242

2001		Unit In Operation	Year=1, Net=1	Unit 1	Unit 2	Unit 3	Unit 4	Unit 5	Unit 6	Unit 7	Unit 8	Total
QF Steam For:		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Pounds Per Hour (Average)		0	0	0	0	0	0	0	0	0	0	0
Pounds Per Year		0	0	0	0	0	0	0	0	0	0	0
Pressure (psig)		460	460	450	450	450	450	450	450	450	450	450
Degrees of SH (F)		50	50	50	50	50	50	50	50	50	50	50
(Input 0 for saturated steam or input actual degrees of SH)												

244

Facilities Information	General Information
Electric Data	Electric Data

Examination Rate:	1
Lignite Information: Coal Type:	Bituminous
Cost of Purchased Electricity:	\$0.00
Location / destination point:	Plant
Co-Combustion:	None
Water:	None
Land:	None
Other:	None

Exchange Rate (X/USD)	1	US\$	\$/ton - FOB Mine	Coal Pricing - Tonne Basis
Cost per Ton of Fuel (including trans.)			\$16.00 \$15.00 \$30.00 per ton per tonne	69.55 84.76 97.06 121.87% 114.51%
Deposit Cost per Ton of Ash/Scribbler Sludge				
Deposit Cost per Ton of Ash/Scribbler Sludge		\$10.00		
Lime/Limestone			LIMESTONE 1 LIME 2	2
Cost per Ton off:			Lime FOB Mine: Transportation: Total:	\$0.00 \$0.00 \$15.00
Start-up Fuel			Oil # 1 ; NS = 2	2
			Oil Cost Per Gallon (Delivered)	\$0.80
			NS Cost Per Therm	
			Transportation:	\$0.50

#### Operator Related Information:

Operator Fee	\$0
Operator Bonus	\$0
Home Office Tech Support	\$0
Warranty Support	
Number of shifts	4
Union/non-union Facility	0
Overtime	10%
Wage Benefits	40%

#### F160RE-15

✓ 248

✓ 250

Facility Equipment Information:	Unit 1	Unit 2	Unit 3	Unit 4	Unit 5	Unit 6	Unit 7	Unit 8	Unit 9	Unit 10
Type Of Boiler Equipment ( 1 or 2 )	1									
	2									
Unit Design / Commercial Operation Date										
Number of Boilers										
Flyash Control System:										
1 ESP	PC									
2 BAGHOUSE	1	1	3	1	1	1	1	1	1	1
3 BAGHOUSE PLUS GORETEX BAGS										
SO2 Control System:										
1 NO SO2 EQUIPMENT	3	1	2	1	1	1	1	1	1	1
2 DRY INJECTION										
3 SCRUBBER										
Misery Control System										
1 NO HG CONTROL	2	1	1	1	1	1	1	1	1	1
2 ACTIVATED CARBON										

General Information

3/17/2001

5:06 PM

CostPer103701

1 LOW NOX BURNERS	1						
2 SNCR	2						
3 SCR	3						
Cooling Tower: (Year1; No=0)							
Cycle:							
1 ACTUAL CYCLE VALUES	1						
2 STANDARD 1800 PSIG (NON-REHEAT)	1						
3 STANDARD 2400 PSIG ( 5% OP)	1						
Superheater:							
( -400,000 @ 600 MW)							
Flow without QF heat loss	2,669,331						
Eqv. QF Steam Increase	0						
Outlet Pressure	2,669,331						
Outlet Temperature	2,400						
Reheater:	1,000						
~3,770,000 @ 800 MW	0						
Flow without QF heat bas	2,254,865						
Eqv. QF Steam Increase	0						
Inlet Pressure (psig)	2,254,865						
Inlet Temperature (F)	639						
Outlet Pressure (psig)	680						
Outlet Temperature (F)	574						
Feedwater Temperature	1,000						
Stack Temperature	480						
Ambient Temperature	1	275	0	0	0	0	0
Spares Cost	2 STANDARD	80	0	0	0	0	0
Fuel Loss during Handling:	SO2 Removal	80%	0%	0%	0%	0%	0%
		3%	0%	0%	0%	0%	0%

/ 254

Fuel Information:

ACTUAL ANALYSIS  
STANDARD BITUMINOUS  
STANDARD SUBBITUMINOUS  
STANDARD LIGNE (TEXAS)  
STANDARD NATURAL GAS

Selected Fuel Input:

Fuel Analysis:		Sub-BurntOil		Natural Gas (Gas analysis is entered on fuels page)	
Ultimate Analysis	1	Oxygen	O2	0.00%	
Maturity	2	Argon	A	0.00%	
Ash	29.60%	Carbon Dioxide	CO2	0.00%	
Carbon	5.50%	Nitrogen	N2	0.00%	
Hydrogen	48.30%	H2		0.00%	
Nitrogen	3.40%	Sulfur Dioxide	H2S	0.00%	
Chlorine	0.70%	Methane	CH4	0.00%	
Sulfur	0.01%	Ethane	C2H6	0.00%	
Oxygen	0.85%	Propane	C3H8	0.00%	
	11.80%	i-Butane	C4H10	0.00%	
	10.30%	n-Pentane	C5H12	0.00%	
		t-Hexane	C6H14	0.00%	
		Total:		0.00%	
Excess Air:	20.00%	Excess Air:	10.00%	Btu/Cf(1)	
H:M:	8.500	Btu/h	0	L:H:	
L:H:	18.28	G/Hour	0	Note 1: (6BF:307W/G)	
Proximate:		Fixed Carbon (differential)			
Volatile Matter	33.71%				
Sulfur	30.44%				
	0.85%				

3/17/2001  
5:06 PM

CoalPart031701  
General Information

/ 254

# Figure-17

Furnace Volume Design Parameters	
Volume - Col. Ft.:	20,000
Surface - Sq. Ft. (EPRIS - Up Note):	200,000
NH/PA:	1,850,000
Carbon Loss:	0.25%

✓ 258

Furnace Volume Design Parameters	
Volume - Col. Ft.:	20,000
Surface - Sq. Ft. (EPRIS - Up Note):	200,000
NH/PA:	1,850,000
Carbon Loss:	0.25%

FIGURE - 18 ↘  
270

File Name: CoalPerf031601  
 Project Name: Sample Project

Location: USA

Operator: To Be Determined

	Escalation Factor	4.00%	1.070	Unit 1	Unit 2	Unit 3	Unit 4	Unit 5	Unit 6	Unit 7	Unit 8	Total Facility
Number of Equipment Sets Per Unit				1	0	0	0	0	0	0	0	1
Unit Gross Output				\$73	0	0	0	0	0	0	0	\$73
(9-Mar-01)												
Development Costs												
Internal Costs				\$11,333	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$11,332.65
Third Party Costs				\$12,325	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$12,325.70
Project Counsel				\$1,578	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$1,577.69
Development Contingency				\$0	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Land Options				\$966	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$966.06
Pre NTP EPC Cost				\$1,672	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$1,672.11
Total Development Costs				\$28,694	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$28,694.24
Development Fee				\$0.05	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.057.13
Mine Acquisition Costs				\$0	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Site Purchase				\$12,076	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$12,076.17
Development Fee/Mine Acquisition/Site				\$21,133	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$21,133.30
Plant												
Boilers												
Headers				\$4,307	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Heating Surface				\$21,008	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Waterwall				\$12,904	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Steel				\$16,553	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Fring Equipment				\$10,275	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Misc Equipment				\$20,246	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
				\$86,501	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$86,500.85
Turbine Generators				\$38,324	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$38,324.25
BAGHOUSE				\$7,459	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$7,459.07
SCRUBBER				\$37,253	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$37,252.60
ACTIVATED CARBON				\$419.07	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$419.07
SCR				\$37,253	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$37,252.60
Circulating Water System				\$1,275.65	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$1,275.65
Electrical System & Equipment				\$23,330.49	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$23,330.49
Fuel Storage & Handling				\$1,862.70	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Infrastructure				\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Water Treatment				\$3,132.42	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$3,132.42
Other				\$39,765.15	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$39,765.15
Misc Insurance				\$515.62	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$515.62
Fixtures												
Boilers - not plant related				\$446.53	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$446.53
Chimneys				\$3,500.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$3,500.00
Cooling Towers				\$20,257.65	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$20,257.65
Coal Bunkers				\$1,002.47	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$1,002.47
Land & Buildings												
Buildings				\$34,773.70	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$34,773.70
Other												
EPC Target				\$459,085.80	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$459,085.80
Total EPC Costs				\$402,046.65	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$402,046.65
Transmission Fees During Construction				\$4,021.07	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$4,021.07
Waste Water Pipeline				\$11,189.05	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$11,189.05
Management Services During Construction												
General & Administrative				\$15,302.46	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$15,302.46
Professional Services				\$3,760.96	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$3,760.96
Engineering Consultants				\$1,972.11	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$1,972.11
Utilities				\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Owner's Mobilization G&A				\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Other Owner's Costs				\$2,116.63	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$2,116.63
Management Services Fee				\$1,245.40	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$1,245.40
Total Owner's Costs				\$24,059.76	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$24,059.76
O&M Mobilization												
Labor				\$8,608.58	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$8,608.58
Fee				\$1,015.84	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$1,015.84
G&A				\$374.70	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$374.70
Plant Consumables				\$1,356.81	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$1,356.81
Equipment				\$5,423.31	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$5,423.31
Owners G&A				\$9,663.25	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$9,663.25
Infrastructure Costs												
Roads				\$8,293.15	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$8,293.15
Community Infrastructure				\$1,054.09	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$1,054.09
Mine Industrial Area				\$3,160.74	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$3,160.74
Construction Camp				\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Water Management				\$1,176.37	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$1,176.37
Total Infrastructure Costs				\$15,674.35	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$15,674.35
Owner's Contingency												
Power Plant EPC Costs				\$40,204.87	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$40,204.87
Transmission Costs				\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Electrical Interconnection				\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Infrastructure Costs				\$1,597.44	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$1,597.44
Total Owner's Contingency				\$41,772.10	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$41,772.10
Financing Fees/Costs												
Financial Advisor				\$6,409.37	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$6,409.37
Upfront Fees				\$8,381.48	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$8,381.48
				\$14,790.85	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$14,790.85
Unit Gross Output				1	0	0	0	0	0	0	0	1
Total Cost				\$58,522.23	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$58,522.23
\$/kW Installed				\$1,576	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$1,576

File Name: CoalPerf031601  
Project Name: Sample Project

Location: USA

Operator To Be Determined

Date	Hours of Operation @ end of financial year	Mar-01	Mar-02	Mar-03	Mar-04	Mar-05	Mar-06	Mar-07	Mar-08	Mar-09	Mar-10
Operational Year											10 Year Average
Waterwall	\$2,58	\$1,200	\$258	\$258	\$258	\$258	\$258	\$258	\$258	\$258	\$258
Heating Surface	\$4,59	\$2,193	\$39	\$39	\$39	\$39	\$39	\$39	\$39	\$39	\$39
Gases	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Pulverizers	\$0	\$1,032	\$0	\$258	\$0	\$516	\$0	\$1,032	\$0	\$258	\$310
Air Pre-Heater	\$0	\$1,032	\$0	\$258	\$0	\$516	\$0	\$1,032	\$0	\$258	\$310
Fuel Handling	\$0	\$88	\$0	\$177	\$0	\$38	\$0	\$177	\$0	\$88	\$62
Headers	\$0	\$215	\$0	\$0	\$0	\$0	\$0	\$215	\$0	\$0	\$43
Steel	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$2
Balls/Crushers	\$0	\$0	\$0	\$0	\$0	\$132	\$0	\$0	\$0	\$0	\$13
Casing/Refractory/Dutchwork	\$0	\$0	\$0	\$0	\$0	\$177	\$0	\$0	\$0	\$0	\$18
Chemical Cleaning	Sub-Total	\$687	\$5,151	\$697	\$1,358	\$697	\$2,143	\$697	\$6,489	\$697	\$1,301
Turbine (ins/overhaul)	\$0	\$1,813	\$0	\$0	\$0	\$0	\$0	\$1,916	\$0	\$0	\$383
Turbine Valves	\$0	\$575	\$0	\$0	\$287	\$0	\$0	\$575	\$0	\$0	\$144
Generator (inspections)	Sub-Total	\$0	\$7,956	\$0	\$0	\$0	\$0	\$7,956	\$0	\$0	\$153
Gravity Filters	Sub-Total	\$0	\$1,267	\$0	\$0	\$287	\$0	\$3,267	\$0	\$0	\$880
Asph Resin	\$34	\$0	\$0	\$376	\$0	\$0	\$407	\$0	\$0	\$188	\$132
Cation Resin	\$0	\$141	\$0	\$0	\$0	\$125	\$0	\$0	\$0	\$0	\$27
MB Resin	\$141	\$0	\$0	\$110	\$0	\$0	\$125	\$0	\$0	\$41	\$52
Carbon Filters	\$78	\$0	\$78	\$0	\$78	\$0	\$78	\$0	\$78	\$0	\$39
Gravity Filters	Sub-Total	\$684	\$141	\$41	\$486	\$78	\$126	\$411	\$116	\$116	\$55
BAGHOUSE SCRUBBER	Sub-Total	\$0	\$0	\$164	\$0	\$0	\$164	\$0	\$0	\$164	\$0
Electrical	\$0	\$233	\$0	\$233	\$0	\$233	\$0	\$233	\$0	\$233	\$117
&C	\$0	\$117	\$0	\$117	\$0	\$117	\$0	\$117	\$0	\$117	\$58
Power Block	\$0	\$1,916	\$0	\$988	\$0	\$988	\$0	\$1,916	\$0	\$1,916	\$479
Ash Handling	\$413	\$0	\$203	\$0	\$203	\$0	\$413	\$0	\$413	\$0	\$165
General	\$122	\$0	\$139	\$0	\$146	\$0	\$156	\$0	\$122	\$0	\$68
Facilities/infrastructure	Sub-Total	\$636	\$122	\$0	\$139	\$0	\$156	\$0	\$170	\$0	\$122
	Sub-Total	\$2,887	\$346	\$489	\$1,310	\$606	\$689	\$606	\$655	\$655	\$4712

FIGURE E-13

**General Project Information:**

File Name: CoalPerf031601  
Project Name: Sample Project

Location: USA

Operator: To Be Determined

**Operator's Fees & Services:**

Operator Fee	\$0
Legal Services	\$139,805
Construction Services	\$146,709
Testing Services	<u>\$41,424</u>
Total Fees & Services	\$327,939

**Travel:** \$86,300

**Misc. Employee Expenses** \$286,422

↑  
FIGURE- 20      310

File Name: CoalPerf031601  
Project Name: Sample Project

Location: USA

Operator: To Be Determined

Sample Project

Consumables:

Lubricating Oils	\$379,977
Hydraulic Oil.	
Solvents/Boiler Wash.	
Cleaning Materials.	
Welding Supplies:	
Nuts/Bolts/Small Mechanical Parts:	
Fuses/Light Bulb/small Elect. Parts:	
Fittings/Small I&E Parts:	
Gas & Oil.	
Total Oils and Lubricants	\$379,977

Chemicals:

Boiler Water.	62.27%	\$285,603
Cooling Water.	36.38%	\$166,889
Demin. Regen.	1.35%	\$6,194
Fuel Oil.		
Sanitary		
NOx		
Aqueous Ammonia:		
Total Chemicals.		\$458,686

Gases:

Nitrogen:	\$0
Hydrogen:	\$0
Oxygen/Acetylene	\$0
NOx, CO, SO2, O2 Span Gas	\$0
Total Gases:	\$0

Office Supplies & Services:

Postage, Overnight Mail, etc:	\$17,104
Freight	\$0
Telephone	\$41,038
Utilities	\$9,263
Dues, Subscriptions	\$70,914
Advertising	\$0
Camera/ Film/Photo Supplies:	\$0
Copier/Paper/Service:	\$0
Office Supplies:	\$40,194
General Supplies	\$0
Audio Visual Equipment:	\$0
Portable Radios/Service:	\$0
Drinking Water:	\$0
Safety Supplies:	\$0
Safety/Environmental Insp:	\$0
Instrument Service/Repair:	\$0
Vehicles/Service/Fuel:	\$165,284
Insurance Autos/Trucks	\$0
Lift Trucks/Service:	\$0
Small Tools:	\$0
Software for Computers:	\$271
Computer Hardware:	\$0
Building Maintenance:	\$4,594
Janitorial Supplies:	\$0
Misc. Expenses:	\$13,310
Uniforms:	\$0
Total Supplies and Services	\$361,973

Office Furniture/Rent:

Office Rent:	\$0
Desk/Chairs/etc:	\$0
Lab/Shop/Cntrl. Rm Equip:	\$0
Computer Lease:	\$0

Total Office Furniture \$0

FIGURE - 21 ↑ 320

Direct Mat'l

**File Name:** CoalPerf031601  
**Project Name:** Sample Project

**Location:** USA

**Operator:** To Be Determined

**Rentals/Lease:**

Tools:	\$15,304
Equipment:	\$261,694
Office:	\$57,431
Office Equipment	\$1,066,871
Railcar:	\$17,253
Lease Auto/Tucks	\$1,418,553
Total Rentals:	

**Planned Spare Parts:**

Boiler:	\$1,731,661
Turbine:	\$766,330
APC Equipment:	\$149,151
Feedwater System:	\$62,661
BOP:	\$176,591
Total Spare Parts:	\$2,886,394

FIGURE - 22

↑  
340

File Name: ConfPerf03601  
Project Name: Sample Project  
Location: USA  
Operator: To Be Determined

**Proximate Analysis:**

FC	33.71%
VM	30.44%
S	0.85%
M	28.55%
A	5.45%
Total	100.00%
HHV (Btu#)	8,500

Information used in conjunction with the coal classification figure:

BTU-  
DRY.  
33.70%

**Project Coal Classification:**

Coal Type:	3
(Calculated)	Sub-Braunous

**Ash Mineral Analysis:**

Silica - SiO <sub>2</sub>	31.00
Alumina - Al <sub>2</sub> O <sub>3</sub>	14.00
Titania - TiO <sub>2</sub>	1.10
Ferro Oxide - Fe <sub>2</sub> O <sub>3</sub>	6.50
Lime - CaO	24.60
Magnesia - MgO	6.00
Potassium Oxide - K <sub>2</sub> O	0.25
Sodium Oxide - Na <sub>2</sub> O	1.30
Sulfur Trioxide - SO <sub>3</sub>	12.20
Phosphorus Pentoxide - P <sub>2</sub> O <sub>5</sub>	0.70
Undetermined	2.35
Total	100.00

Ash Fusion Temperatures (Deg. F)  
Initial Deformation-Reducing (Input Data)  
Initial Deformation-Oxidizing (Input Data)

**PAR Formula Relationships:**

BASE/ACID RATIO: (A range of 4-7 causes ash to melt in low temperature )	0.7641
IRON/CALCIUM RATIO: (≤1.3 indicates lowers the fusibility temp. of the ash.)	0.28
IRON/OLIVITE RATIO: (ash type name)	0.21
SILICA/ALUMINA RATIO: (above 2.8 & b)	2.21

FIGURE - 23

## Project Natural Gas Analysis:

Natural Gas Analysis:	
Oxygen	O <sub>2</sub>
Air	A
Carbon Dioxide	CO <sub>2</sub>
Nitrogen	N <sub>2</sub>
Hydrogen	H <sub>2</sub>
Hydrogen Sulfide	H <sub>2</sub> S
Ethane	C <sub>2</sub> H <sub>6</sub>
Propane	C <sub>3</sub> H <sub>8</sub>
Butane	C <sub>4</sub> H <sub>10</sub>
Pentane	C <sub>5</sub> H <sub>12</sub>
Hexane	C <sub>6</sub> H <sub>14</sub>
Total:	

Fuel Gas Weight  
#wtCu. F.(gss)

0

Gt to GT (MMBTU)

372.6

Gt to Blue Burners

32.26

Total Gt:

405.08

58708

HHV of Fuel (BTU/Cu. ft.)

7144

Cu. ft. of Gas Prod/Hr

423,553,952

Lbs. of Gas Prod/Hr

#DIV/0!

Lbs. of Air/Hr

#DIV/0!

Total Gas Flow @ 0% EA

#DIV/0!

Natural Gas Heating Value Conversion Analysis:  
17-Mar-01

Natural Gas Analysis:	
Oxygen	O <sub>2</sub>
Argon	A
Carbon Dioxide	CO <sub>2</sub>
Nitrogen	N <sub>2</sub>
Hydrogen	H <sub>2</sub>
Hydrogen Sulfide	H <sub>2</sub> S
Methane	C <sub>4</sub> H <sub>10</sub>
Ethane	C <sub>2</sub> H <sub>6</sub>
Propane	C <sub>3</sub> H <sub>8</sub>
Butane	C <sub>4</sub> H <sub>10</sub>
Pentane	C <sub>5</sub> H <sub>12</sub>
Hexane	C <sub>6</sub> H <sub>14</sub>
Total:	

Natural Gas Analysis:

Percent by vol.

0.00%

Blu/CF(1)

0

HHV

Comp. Blu

(68F,14.7psi(a))

HHV

Comp. Blu

(68F,307WG)

LHV

Comp. Blu

(68F,307WG)

LHV

Comp. Blu

(68F,307WG)

Note:  
(1) Source Mark's Standard Handbook for Mechanical Engineers  
Ninth Edition Page 4-20

HHV/LHV Ratio

#DIV/0!

FIGURE - 24

Natural Gas Analysis:	
Molecular Weight	32.00
Percent by v/o	0.00%
O <sub>2</sub>	0.00%
A	0.00%
CO <sub>2</sub>	0.00%
N <sub>2</sub>	0.00%
H <sub>2</sub>	0.00%
H <sub>2</sub> S	0.00%
C <sub>2</sub> H <sub>6</sub>	0.00%
C <sub>3</sub> H <sub>8</sub>	0.00%
C <sub>4</sub> H <sub>10</sub>	0.00%
C <sub>5</sub> H <sub>12</sub>	0.00%
C <sub>6</sub> H <sub>14</sub>	0.00%
Total:	0

Lb Constituent  
Per Lb Fuel

0.00

#DIV/0!

0.00

&lt;p

Molecular Weight	S	32.054	1	32.054
O	O	16.969	2	16.969
				64.003
				50.054%

**Cost** \$150.00 **Effort**

Southern Europe

Mines	Average BTU/btuh Content	Average Ash Content (%)	Percent Sulfur (dS%)	In Compliance (%)	S % allowed for Compliance (%)	lbs SO <sub>2</sub> /MM Btu	SO <sub>2</sub> Efficiency	lbs SO <sub>2</sub> /MM Btu	Reduction	Required Offsets		
											Tons	\$/Ton
Bally	12,950	2.14%	7.50%	N	0.775%	3.3	10.00%	2.97	0.038462		\$5,788	
Colonial	12,800	0.63%	8.69%	N	0.765%	1.45	0.00%	1.45	0.018560		\$2,794	
Whitehat	12,800	1.60%	8.25%	N	0.765%	2.5	0.00%	2.50	0.032000		\$4,800	
Julian	12,800	1.28%	9.75%	N	0.775%	2	0.00%	2.00	0.025800		\$3,870	
Sawmill	12,800	1.29%	9.75%	N	0.775%	2	0.00%	2.00	0.025600		\$3,870	
Sentinel	12,800	1.28%	9.76%	N	0.775%	2	0.00%	2.00	0.025800		\$3,870	
Whitfield	12,800	0.63%	9.25%	N	0.765%	1.45	0.00%	1.45	0.018560		\$2,794	

Project Info. Check		Tons Fired	BRU	\$22 (ton)	\$ (ton)
Project Info. Check		Tons Fired	BRU	\$22 (ton)	\$ (ton)
Unit 1	HW	756,00	12,229	11,500	8,768
	S.SS1	756,00	12,229	13,510	9,774
	S.SS2	2,264,00	38,718	12,222	46,118
Unit 2	HW	756,00	12,229	11,500	8,768
	S.SS1	756,00	12,229	13,510	9,774
	S.SS2	2,264,00	38,718	12,222	46,118
Unit 3	HW	756,00	12,229	11,500	8,768
	S.SS1	756,00	12,229	13,510	9,774
	S.SS2	2,264,00	38,718	12,222	46,118
Project Info. Check		Tons Fired	BRU	\$22 (ton)	\$ (ton)
Unit 1	HW	2,272,00	38,856	11,500	5,768
	S.SS1	2,272,00	38,856	13,510	5,768
	S.SS2	2,239,00	38,824	12,222	5,768
Unit 2	HW	2,272,00	38,856	11,500	5,768
	S.SS1	2,272,00	38,856	13,510	5,768
	S.SS2	2,239,00	38,824	12,222	5,768
Unit 3	HW	2,272,00	38,856	11,500	5,768
	S.SS1	2,272,00	38,856	13,510	5,768
	S.SS2	2,239,00	38,824	12,222	5,768

FIGURE 25

## O & M Labor, Purchased Power And Fuel Calculations

GENERAL PROJECT INFORMATION:

File Name: CostPer101601  
Project Name: Sample Project

Location: USA

Operator: To Be Determined

ANNUAL INFLATION RATE: 4.0%

BASIS DATE: 2/24/2010

ESCALATION DATE: 7/1/2010

Per Year Es Factor 100

100

Number of Units

1

Total Installed MW

373

Average Unit Size

100

Metric Unit Labor Multiplier

1

Being Updated

2008 to be used to develop 2009

PROJECT

ADJUSTMENT

0

ADJUSTMENT

14.4%

ADJUSTMENT

15.6%

NUMBER OF SHIFTS

SYSTEM

POWER BLOCK

NUMBER OF SHIFTS

4

COMMISSIONS AND MAINTENANCE

1

ADMINISTRATION

1

PERIODIC

1

NUMBER OF EMPLOYEES

1

HOURLY WAGE

\$10.94

NUMBER OF EMPLOYEES

1

</

REPLACEMENT RESERVE      MBC EXPENSES      WATER & S

GENERAL ESTATE TAXES

Facility Q \$3,311,600

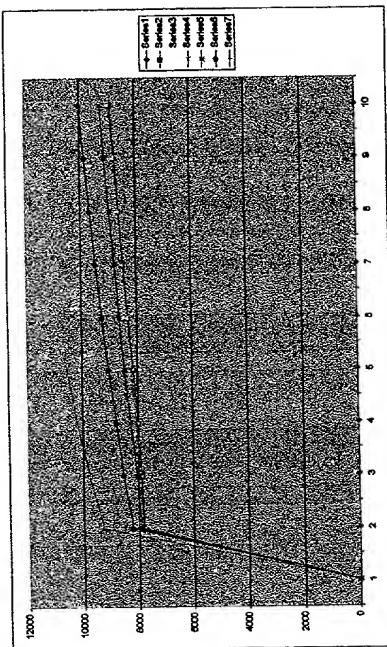
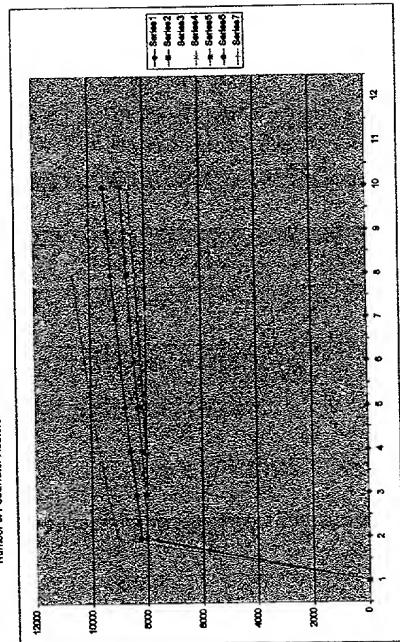
FIGURE · 27

# FIGURE 28

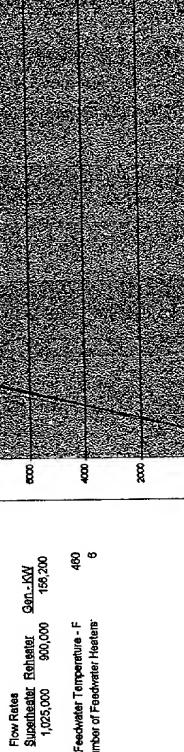
This tab is being used to adjust variations in heat rate at partial loads in the performance section of the model

Flow Rates  
Substrat: Refinable San-KW  
1,025,000 900,000 150,200  
Boiler Feedwater Temperature - F  
Number of Feedwater Heaters 6

Exhaust Pressure	% Change	TCDF Last Stage Bucket Length	20
0.5	-3.12%	7746	7093
1	-1.22%	7897	7985
1.5	0.00%	7955	7895
2	0.03%	8052	8059
2.5	1.68%	8056	8055
3	2.33%	8181	8181
3.5	2.68%	8226	8275
4	3.36%	8254	8376
4.5	3.86%	8286	8472
5	4.20%	8331	8536



Load	TCDF Last Stage Bucket Length	30
1.0	7832	7853
1.5	7894	7815
2.0	7985	8040
2.5	8149	8203
3.0	8312	8376
3.5	8486	8530
4.0	8652	8712
4.5	8737	8841
5.0	8891	8951

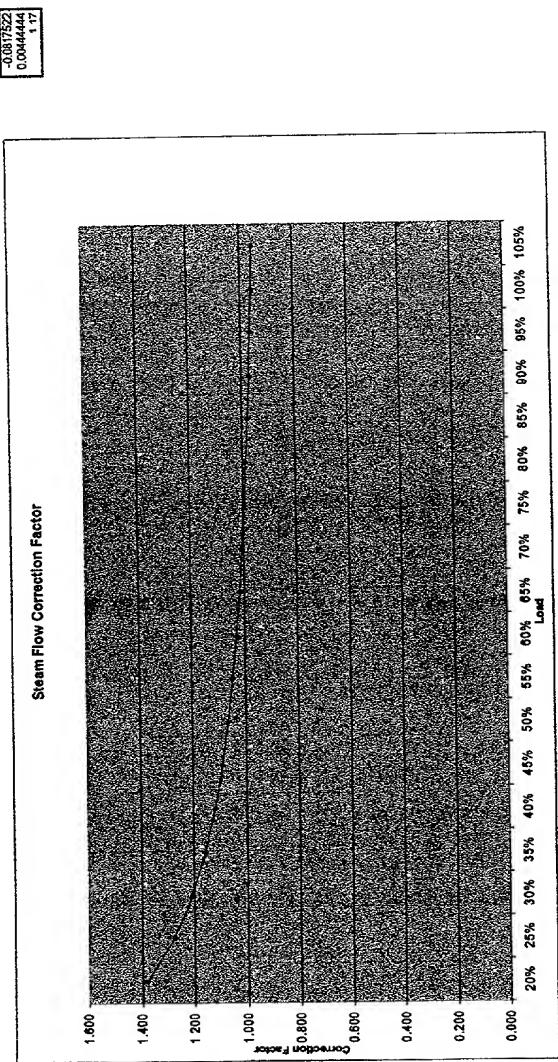
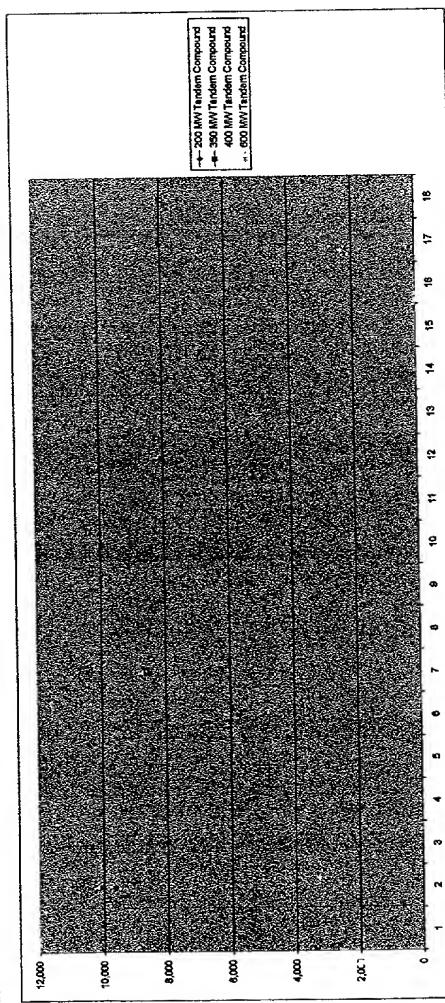


Load	TCDF Last Stage Bucket Length	20
1.0	7832	7853
1.5	7894	7815
2.0	7985	8040
2.5	8149	8203
3.0	8312	8376
3.5	8486	8530
4.0	8652	8712
4.5	8737	8841
5.0	8891	8951

Heat Rate

Check	20%	25%	30%	35%	40%	45%	50%	55%	60%	65%	70%	75%	80%	85%	90%
250 MW Tandem Compound	9,650	10,143	10,737	11,331	11,925	12,519	13,113	13,707	14,299	14,893	15,487	16,081	16,675	17,269	17,863
350 MW Tandem Compound	10,225	10,722	11,319	11,916	12,513	13,110	13,707	14,294	14,891	15,488	16,075	16,672	17,269	17,863	18,457
400 MW Tandem Compound	9,894	9,590	9,286	8,982	8,678	8,374	8,070	7,766	7,462	7,158	6,854	6,550	6,246	5,942	5,638
450 MW Tandem Compound	9,564	9,260	8,956	8,652	8,348	8,044	7,740	7,436	7,132	6,828	6,524	6,220	5,916	5,612	5,308

FIGURE - 29



# FIGURE-30

File Name: CoalPort031601  
 Project Name: Sample Project  
 Location: USA  
 Operator: To Be Determined

EDispatch Information For Reference Only		EDispatch Information For Reference Only												EDispatch Information For Reference Only											
Average Annual Capacity	373	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020					
Capacity Factor	83.70%	89.00%	71.30%	69.80%	67.50%	68.10%	67.70%	66.00%	67.80%	68.20%	67.90%	67.00%	67.30%	67.30%	66.60%	67.10%	68.80%	67.20%	67.30%	67.40%					
Creditited Capacity Factor	89.00%	77.00%	81.70%	88.00%	87.70%	87.60%	87.50%	87.40%	87.30%	87.20%	87.10%	87.00%	87.00%	87.00%	87.00%	87.00%	87.00%	87.00%	87.00%	87.00%	87.00%				
Availability	90.00%	90.00%	90.00%	90.00%	90.00%	90.00%	90.00%	90.00%	90.00%	90.00%	90.00%	90.00%	90.00%	90.00%	90.00%	90.00%	90.00%	90.00%	90.00%	90.00%	90.00%				
Average Load	83.00%	94.44%	78.22%	77.33%	75.00%	75.87%	74.56%	75.56%	75.44%	75.33%	75.78%	75.44%	75.11%	74.00%	74.56%	74.00%	74.44%	74.00%	74.87%	74.38%	74.88%				
Hours in Year	6,760	6,764	6,764	6,760	6,760	6,760	6,764	6,764	6,760	6,760	6,764	6,760	6,764	6,760	6,764	6,760	6,764	6,760	6,764	6,760	6,764				
Hours Dispatched	7,884	7,884	7,906	7,884	7,884	7,884	7,884	7,884	7,884	7,884	7,884	7,884	7,884	7,884	7,884	7,884	7,884	7,884	7,884	7,884	7,884				
Annual Output	2,731,405	2,731,698	2,353,127	2,271,276	2,222,326	2,195,882	2,193,093	2,15,800	2,212,538	2,231,687	2,215,800	2,193,093	2,15,800	2,193,093	2,15,800	2,193,093	2,15,800	2,193,093	2,15,800	2,193,093	2,15,800				
Creditited Annual Output	2,324,778	2,365,851	2,352,581	2,352,581	2,352,581	2,352,581	2,352,581	2,352,581	2,352,581	2,352,581	2,352,581	2,352,581	2,352,581	2,352,581	2,352,581	2,352,581	2,352,581	2,352,581	2,352,581	2,352,581	2,352,581				
Major Outages	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		
Hours Available for Dispatched	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2021			
January	744	744	744	744	744	744	744	744	744	744	744	744	744	744	744	744	744	744	744	744	744	744			
February	672	672	672	672	672	672	672	672	672	672	672	672	672	672	672	672	672	672	672	672	672	672			
March	240	240	240	240	240	240	240	240	240	240	240	240	240	240	240	240	240	240	240	240	240	240			
April	720	720	720	720	720	720	720	720	720	720	720	720	720	720	720	720	720	720	720	720	720	720			
May	744	744	744	744	744	744	744	744	744	744	744	744	744	744	744	744	744	744	744	744	744	744			
June	720	720	720	720	720	720	720	720	720	720	720	720	720	720	720	720	720	720	720	720	720	720			
July	744	744	744	744	744	744	744	744	744	744	744	744	744	744	744	744	744	744	744	744	744	744			
August	744	744	744	744	744	744	744	744	744	744	744	744	744	744	744	744	744	744	744	744	744	744			
September	720	720	720	720	720	720	720	720	720	720	720	720	720	720	720	720	720	720	720	720	720	720			
October	0	744	744	744	744	744	744	744	0	744	744	744	744	744	744	744	744	744	744	744	744	744			
November	720	456	720	720	720	720	720	720	456	720	720	720	720	720	720	456	720	720	456	720	456	720			
December	744	744	744	744	744	744	744	744	744	744	744	744	744	744	744	744	744	744	744	744	744	744			
Total	8258	7248	8258	8258	8258	8258	8258	8258	8258	8258	8258	8258	8258	8258	8258	8258	8258	8258	8258	8258	8258	8258			
Hours Dispatched	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2021			
January	692	692	692	692	692	692	692	692	692	692	692	692	692	692	692	692	692	692	692	692	692	692			
February	625	625	647	625	625	647	625	625	647	625	625	647	625	625	647	625	625	625	625	625	625	625			
March	240	226	226	226	226	226	226	226	226	226	226	226	226	226	226	226	226	226	226	226	226	226			
April	720	677	677	677	677	677	677	677	677	677	677	677	677	677	677	677	677	677	677	677	677	677			
May	744	707	707	707	707	707	707	707	707	707	707	707	707	707	707	707	707	707	707	707	707	707			
June	720	684	684	684	684	684	684	684	684	684	684	684	684	684	684	684	684	684	684	684	684	684			
July	714	714	714	714	714	714	714	714	714	714	714	714	714	714	714	714	714	714	714	714	714	714			
August	714	714	714	714	714	714	714	714	714	714	714	714	714	714	714	714	714	714	714	714	714	714			
September	720	684	684	684	684	684	684	684	684	684	684	684	684	684	684	684	684	684	684	684	684	684			
October	0	707	707	707	707	707	707	707	0	707	707	707	707	707	0	707	707	707	707	0	707	707			
November	720	429	677	677	677	677	677	677	677	677	677	677	677	677	677	677	677	677	677	677	677	677			
December	744	699	699	699	699	699	699	699	699	699	699	699	699	699	699	699	699	699	699	699	699	699			
Total Hours Dispatched	8256	8851	7828	8851	7806	7806	6873	7806	7806	7806	7806	7806	7806	7806	7806	7806	7806	7806	7806	7806	7806	7806			
Percentage of Available Hours	94.00%	94.52%	94.54%	94.54%	94.54%	94.54%	94.54%	94.54%	94.54%	94.54%	94.54%	94.54%	94.54%	94.54%	94.54%	94.54%	94.54%	94.54%	94.54%	94.54%	94.54%	94.54%			
Percentage of Annual Hours	94.25%	78.20%	89.11%	89.10%	89.10%	89.10%	89.10%	89.10%	89.10%	89.10%	89.10%	89.10%	89.10%	89.10%	89.10%	89.10%	89.10%	89.10%	89.10%	89.10%	89.10%	89.10%			
Average Annual Load	95.00%	98.58%	98.51%	98.51%	98.51%	98.51%	98.51%	98.51%	98.51%	98.51%	98.51%	98.51%	98.51%	98.51%	98.51%	98.51%	98.51%	98.51%	98.51%	98.51%	98.51%	98.51%			



Assumed Tax (per ton of Carbon ):	\$40
-----------------------------------	------

Sub- Bituminous		
Facility Net Heat Rate (HHV):	BTU/KWH	9,956
HHV of Coal:	BTU/#	8,500
Percent Carbon in Coal (WT)		48.30%
Unit Capacity:	MW	373
Carbon Loss:		0.25%
Molecular Weight of Carbon		12.01
Molecular Weight of O2		32.00
Price per MMBtu from Coal		1.11
Price per Ton of Coal (delivered)	per Ton	\$30.00
Net KWH Produced:		2,761,097,147
Coal Fired	Tons	1,617,002
Carbon in Flue Gas	Tons	781,012
CO2	Tons	2,861,804
Fuel Cost:	Total	\$48,631,344
	\$/kwh	\$0.0176
Carbon Tax:		\$31,240,484
	per KWH	\$0.0113
	per MMBtu	\$1.14

Tons CO2/kWh

0.001036473

FIGURE - 32

FIGURE 33 500

